INFORMAZIONI PERSONALI

Daniele Coculo

POSIZIONE RICOPERTA

Vincitore di assegno di ricerca categoria B, Tipologia I dal titolo “Coinvolgimento della parete cellulare dell'olivo nella resistenza a Xylella fastidiosa”, per lo svolgimento di attività di ricerca per il Settore Concorsuale 05/A2, Settore scientifico didattico BIO/04 “Fisiologia vegetale”, relativo al progetto di ricerca: “Azioni di ricerca per ridurre l'impatto sugli ecosistemi agricoli e naturali del patogeno dannoso per le piante Xylella fastidiosa” da svolgersi presso il Dipartimento di Biologia e Biotecnologie “Charles Darwin” dell’Università degli Studi di Roma “La Sapienza”.

ESPERIENZA PROFESSIONALE

01/04/2022 - 30/06/2022

Research of three months at the Phytopathology TUM School of Life Sciences Technical University of Munich, Germany. Research topic: “Impact of Pectin Methyl Esterase activity on FERONIA sensing and signaling in cell wall integrity maintenance against pathogens”.

ISTRUZIONE E FORMAZIONE

01/11/2020 - 31/01/2024

PhD in Cell and Developmental Biology, Sapienza University of Rome. Research topic: “Plant immunity mechanisms triggered by PME activity”.

10/2018 - 10/2020

Master’s degree in Cell Biology and Technology (110/110 cum laude), Sapienza University of Rome. Master’s degree thesis title: “Molecular Dynamics Tuning PME Activity in Plant Immunity”.

10/2012 - 10/2018

Bachelor’s degree in Biological Sciences (Genetic-Molecular plan) (110/110 cum laude), Sapienza University of Rome. Bachelor’s degree thesis title: “Immunità di Arabidopsis contro Botrytis: isolamento e caratterizzazione di mutanti PME17”.

COMPETENZE PERSONALI

Lingua madre: Italiano

Altre lingue

	COMPRENSIONE		PARLATO		PRODUZIONE SCRITTA
	Ascolto	Lettura	Interazione	Produzione orale	
Inglese	B2	B2	B2	B2	B2

Competenze professionali

Molecular biology: nucleic acids extraction and purification, nucleic acids amplification by PCR, agarose gel electrophoresis of nucleic acids, overlapping PCR, DNA labeling, RNA reverse transcription, gene expression analysis by semi-quantitative (sqRT-PCR) and quantitative (qRT-PCR) Real Time PCR, molecular cloning (Gateway cloning system), preparation of constructs for the transformation of bacteria and plants, manipulation of *Escherichia coli* and *Agrobacterium tumefaciens* for plant transient transformation and plants stable transformation (Floral dip method), crossing of Arabidopsis plants, expression of recombinant proteins.

Microbiology: pathogenic fungal culture (*Botrytis cinerea* and *Erysiphe cruciferarum*), bacterial (*E. coli*) and yeast culture (*Pichia pastoris*), preparation of chemically competent bacterial cells, bacteria transformation, cellular growth characterization in different media, plasmid purification. knowledge of different model systems of plants (Arabidopsis and tobacco). knowledge to practice sterile techniques, use of greenhouses and growth chambers.

Biochemistry: extraction and separation of proteins with one dimensional electrophoresis (SDS-PAGE), Western blots, detection and quantification of protein on gel and nitrocellulose membrane by chemiluminescence or fluorescence imaging, enzymatic activity, spectrophotometer assay, Coomassie brilliant blue staining.

Plant assays: treatments of both Arabidopsis seedlings and adult leaves with immunity elicitors, ROS quantification by luminescence- and dye-based assays, gene expression, infection with fungal phytopathogens (*Botrytis cinerea* and *Erysiphe cruciferarum*), elicitor-induced protection against pathogens.

Histochemical analyses: Trypan blue, Ruthenium red, Pectoplate (Lionetti 2015), Diaminobenzidine and Bradford assay (Bradford 1976).

Research and Bioinformatic software: Microsoft Office systems, ImageJ, Graphpad Prism. Sequence analysis for

protein and nucleic acids (BLAST, CHROMAS), Real-Time PCR data handling system (LinReg), primer sequences (Primer3, T-DNA express). Knowledge of instruments: PCR, qRT-PCR, gas insufflator, Microscopes, Epifluorescence Microscopes, Chemidoc ™ MP and GELDOC system (Bio-Rad), hoods, centrifuges, freezers and dryers, spectrophotometers. Management of literature.

Patente di guida B

ULTERIORI INFORMAZIONI

Pubblicazioni

1. DANIELE COCULO, Daniele Del Corpo, Miguel Ozáez Martínez, Pablo Vera, Gabriella Piro, Monica De Caroli, Vincenzo Lionetti. Arabidopsis subtilases promote defense-related pectin methylesterase activity and robust immune responses to botrytis infection. Plant Physiology and Biochemistry, August 2023. https://doi.org/10.1016/j.plaphy.2023.107865

2. DANIELE COCULO, VINCENZO LIONETTI. The Plant Invertase/Pectin Methylesterase Inhibitor Superfamily. REVIEW article Front. Plant Sci., 25 March 2022 | https://doi.org/10.3389/fpls.2022.863892

Poster e partecipazioni ad importanti Convegni Nazionali ed Internazionali

1. M. GRECO, D. COCULO, S. AGRESTIC, G. DE LORENZO AND V. LIONETTI. “Upcycling by-products from agroindustry and biorefineries in sustainable phytovaccines”. Convegno della Ricerca di Rome Technopole. March 18, 2024. Roma, Italy.

2. Selected for Chair at the Workshop on Plant Biology 2024 Congress; Centro Residenziale Universitario di Bertinoro. 21-23 February 2024; Forlì-Cesena, Italia. Session 1: “Adaptation mechanisms to environmental stress”; February 21, 2024. Chairs: DANIELE COCULO, Ginevra Marie Eloise Peppi.

3. GRECO M., COCULO D., KOUZOUNIS D., SCHOLS H., MELIDA H., DE LORENZO G. AND LIONETTI V. “Liquid fraction of two-phase olive pomace is enriched in oligosaccharides activators of plant immunity”. Workshop on Plant Biology 2024, Centro Residenziale Universitario di Bertinoro. 21-23 February 2024. Forlì-Cesena, Italia.

4. DANIELE COCULO, MARCO GRECO, DANIELE DEL CORPO AND VINCENZO LIONETTI. “Protein precursors for effective plant immunity: the case of pectin methylesterases”. XII Congress of the Italian Society of Plant Biology. 11-14 September 2023. Bari, Italy.

5. DANIELE COCULO, DANIELE DEL CORPO, GABRIELLA PIRO, MONICA DE CAROLI AND VINCENZO LIONETTI. “SBT3.3 and Pro-PME17 are secreted through distinct protein secretion pathways in the apoplast”. XVI Plant Cell Wall Meeting 2023. 18-22 June 2023. Málaga, Spain.

6. DANIELE COCULO, DANIELE DEL CORPO AND VINCENZO LIONETTI. “Pro-pectin methylesterases as zymogens for plant cell wall mediated immunity” XVI Plant Cell Wall Meeting 2023. 18-22 June 2023. Málaga, Spain.

7. DANIELE COCULO, DANIELE DEL CORPO AND VINCENZO LIONETTI. “Subtilases trigger pectin-related immunity against pathogens”. IX Cell Wall Research Conference. 13-17 June 2022. East Lansing, Michigan.

8. DANIELE COCULO, GABRIELE PECATELLI, DANIELE DEL CORPO AND VINCENZO LIONETTI. “Molecular factors underlying Arabidopsis PME activation against Botrytis”. Plant Biology Europe 2021 (PBE 2021). 28 June-1 July, 2021, Turin, Italy.

Il proponente ha partecipato come membro di unità di ricerca a diversi progetti di ricerca finanziati

1. Research Fund Sapienza University of Rome 2022 (RM122181424F1F42). Research topic: “Pectin methylesterase activity modulates plant immune signalling triggered against microbes”

2. Research Fund Sapienza University of Rome 2021 (RG12117A898EABE0). Research topic: “The plant cell wall: a regulatory hub in immunity and development”

Borse di studio e premi

1. University Funds “Avvio alla Ricerca 2021 Tipo 1”, Research Fund / Grant Sapienza University of Rome (AR12117A8A4A1ADC). Research topic: “Unravel transcription factors triggering AtPME17 expression during Arabidopsis immunity to *Botrytis cinerea*”. (16/11/2021 - 16/11/2022).

2. PhD scholarship, Sapienza University of Rome. (01/11/2020 - 31/01/2024).

3. Project “Torno Subito 2019”, Lazio (Italy) Region Funds. Typology: Work experience Research topic: “In vivo imaging mediante sonde fluorescenti per lo studio dell’espressione di proteine della parete cellulare vegetale nell'interfaccia pianta-patogeno”. (Phase II; 01/07/2020 - 30/09/2020) Department of Biology and Biotechnology "Charles Darwin", Sapienza University of Rome (Italy). (Phase I; 01/03/2020 -

30/06/2020) Department of Biological and Environmental Sciences and Technologies of the University of Salento, Lecce (Italy).

Dati personali Autorizzo il trattamento dei miei dati personali ai sensi del Decreto Legislativo 30 giugno 2003, n. 196 "Codice in materia di protezione dei dati personali".

Il sottoscritto dichiara di essere consapevole che il presente *curriculum vitae* sarà pubblicato sul sito istituzionale dell'Ateneo, nella Sezione "Amministrazione trasparente", nelle modalità e per la durata prevista dal d.lgs. n. 33/2013, art. 15.

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